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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,048	08/28/2001	Takeshi Nishi	SEL 274	5731

7590 12/23/2003  
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EXAMINER

YAMNITZKY, MARIE ROSE

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 12/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/941,048

Applicant(s)

NISHI ET AL.

Examiner

Marie R. Yamnitzky

Art Unit.

1774

-- Th MAILING DATE of this communication app ars on th cover sheet with the correspond nc address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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1. This Office action is in response to Applicants' amendment received October 06, 2003 (Paper No. 8), which amends claims 1, 3, 5, 7, 9 and 11.

2. The indicated allowability of claims 1-4 and 9-12 is withdrawn in view of the newly discovered reference to Salbeck et al. (*Synthetic Metals* 91, pp. 209-215). Rejections based on the newly cited reference follow.

3. Claims 1-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Support for the deletion of various occurrences of the term "organic" from the claims is not clear. Applicants have not indicated where support can be found in the application for this change. Deletion of the term "organic" appears to broaden the scope of the claims beyond the scope of the original disclosure.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Brien et al. in *Appl. Phys. Lett.* Vol. 74, No. 3, pp. 442-444 or Baldo et al. in *Appl. Phys. Lett.* Vo. 75, No. 1, pp. 4-6, either reference in view of Salbeck et al. in *Synthetic Metals* 91, pp. 209-215.

O'Brien et al. disclose an organic electroluminescent device comprising a hole transport layer and an organic luminescent layer in which the hole transport layer is made of  $\alpha$ -NPD and the luminescent layer is made of CBP as a host material and PTOEP as a phosphorescent dopant. The luminescent layer is capable of converting triplet excitation energy into light to be emitted. See the whole O'Brien article.

Baldo et al. disclose an organic electroluminescent device comprising a hole transport layer and an organic luminescent layer in which the hole transport layer is made of  $\alpha$ -NPD and the luminescent layer is made of CBP as a host material and Ir(ppy)<sub>3</sub> as a phosphorescent dopant. The luminescent layer is capable of converting triplet excitation energy into light to be emitted. See the whole Baldo article.

Neither O'Brien et al. nor Baldo et al. disclose spiro-CBP (the host material required by claims 1 and 2) or spiro-NPD (the material required for the hole transport layer of claims 3 and 4).

Salbeck et al. teach that by using a spiro-linkage to modify low molecular organic compounds, processability and morphologic stability can be increased while retaining the electronic properties of the compounds (e.g. see the abstract). Given the teachings of Salbeck et al., it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize spiro-CBP in place of CBP in O'Brien's or Baldo's device, and/or to utilize spiro-NPD in

place of NPD in O'Brien's or Baldo's device, in order to increase the thermal stability of the devices. One of ordinary skill in the art at the time of the invention, having knowledge of the teachings of Salbeck et al., would have reasonably expected spiro-CBP and spiro-NPD to have the same electronic properties as CBP and NPD, respectively, while having better thermal stability than the non-spiro compounds. From Salbeck's teachings such as in the first paragraph of the introduction, and from knowledge in the art, one of ordinary skill in the art at the time of the invention would have recognized the value of using compounds of improved thermal stability in the manufacture of organic electroluminescent devices.

6. Claims 5-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grushin et al. (US 2002/0121638 A1) in view of Salbeck et al. in *Synthetic Metals* 91, pp. 209-215.

See Grushin's whole published patent application. In particular, see paragraphs [0004], [0063]-[0071] and [0076], and see claim 13.

Grushin et al. disclose and claim a device comprising an emitting layer comprising an iridium compound that is capable of converting triplet excitation energy into light to be emitted, the device further comprising an electron transporting layer made from a compound of the first formula shown in present claim 5 ("TAZ") or a compound of the first formula shown in present claim 7 ("PBD"). The electron transporting layer made of either of these two compounds inherently functions as a hole blocking layer.

Grushin et al. teach that 4,4'-N,N'-dicarbazole biphenyl (CBP) may be used in combination with the iridium compound in the emitting layer.

Grushin et al. do not disclose spiro-CBP (the host material required by claims 5-8), spiro-TAZ (a material for the hole blocking layer as defined by the formula set forth in claim 9) or spiro-PBD (a material for the hole blocking layer as defined by the formula set forth in claim 11).

Salbeck et al. teach that by using a spiro-linkage to modify low molecular organic compounds, processability and morphologic stability can be increased while retaining the electronic properties of the compounds (e.g. see the abstract). Given the teachings of Salbeck et al., it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize spiro-CBP in place of CBP, and/or to utilize spiro-TAZ in place of TAZ, and/or to utilize spiro-PBD in place of PBD in Grushin's devices in order to increase the thermal stability of the devices. One of ordinary skill in the art at the time of the invention, having knowledge of the teachings of Salbeck et al., would have reasonably expected spiro-CBP, spiro-TAZ and spiro-PBD to have the same electronic properties as CBP, TAZ and PBD, respectively, while having better thermal stability than the non-spiro compounds. From Salbeck's teachings such as in the first paragraph of the introduction, and from knowledge in the art, one of ordinary skill in the art at the time of the invention would have recognized the value of using compounds of improved thermal stability in the manufacture of organic electroluminescent devices.

7. If a copy of a provisional application listed on the bottom portion of the accompanying Notice of References Cited (PTO-892) form is not included with this Office action and the PTO-892 has been annotated to indicate that the copy was not readily available, it is because the copy

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could not be readily obtained when the Office action was mailed. Should applicant desire a copy of such a provisional application, applicant should promptly request the copy from the Office of Public Records (OPR) in accordance with 37 CFR 1.14(a)(1)(iv), paying the required fee under 37 CFR 1.19(b)(1). If a copy is ordered from OPR, the shortened statutory period for reply to this Office action will not be reset under MPEP § 710.06 unless applicant can demonstrate a substantial delay by the Office in fulfilling the order for the copy of the provisional application. Where the applicant has been notified on the PTO-892 that a copy of the provisional application is not readily available, the provision of MPEP § 707.05(a) that a copy of the cited reference will be automatically furnished without charge does not apply.

8. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (703) 308-4413. (On or about December 30, 2003, the examiner's telephone number will be changed to (571) 272-1531.) The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for Art Unit 1774 is (703) 872-9306 for all official faxes. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (703) 872-9041. On or about December 30, 2003, the examiner's fax number for unofficial faxes will be changed to (571) 273-1531.)

MRY  
December 20, 2003



MARIE YAMNITZKY  
PRIMARY EXAMINER

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